

REMARKS

Claims 1-5 and 7-11 and are pending in the present application. Claims 6 and 14 have been withdrawn, claims 1 and 8 have been amended, claims 2, and 21-27 have been cancelled, and claims 28-31 have been added, leaving Claims 1-5, 7-11 and 28-31 for consideration upon entry of the present Amendment.

Support for the amendments to claim 1 can be found in the Specification in Paragraph 23 and in claim 2 as originally filed.

Support for new claim 28 can be found in claims 1 and 8 and in Specification Paragraph 23.

Support for new claim 29 can be found in claim 9.

Support for new claim 30 can be found in claim 10.

Support for new claim 31 can be found in claim 11.

Claims 21-27 have been cancelled merely to facilitate prosecution and with no prejudice to the subject matter contained therein.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims is respectfully requested in view of the above amendments and the following remarks.

Interview Summary

Applicants thank the Examiner for participating in a telephone interview on July 26, 2006. The Examiner indicated that the proposed claim amendment sent to the Examiner on July 25, 2006 would overcome the outstanding 35 U.S.C § 112 rejection. The claims submitted with the present RCE have been amended accordingly. Applicants appreciate that the amendment was not entered into the record after final.

Two references were discussed with the Examiner. One reference is US PN 5289407 to Strickler et al. Strickler et al. described optical recording of information in a photopolymer as submicron volume elements of altered index of refraction. (Abstract) The index change results from alteration of the photopolymer induced by two-photon excitation of a photo- sensitizer. (Abstract) As discussed with the Examiner, two-photon absorption as it is meant in the present application is the same as defined in Strickler et al. In Strickler et al., it is stated:

Two-photon excitation refers to the simultaneous absorption of two photons by a chromophore molecule. Frequently, real excited states which are normally accessed via single photon absorption may also be excited via absorption of two quanta each having half the energy of the single photon. The essential characteristic of the process in the present context is that the photons must simultaneously impinge on the molecule; thus, the excitation rate is proportional to the square of the incident intensity. Excitation is thereby confined to the ellipsoidal focal volume where the intensity is extremely high. Such excitation is produced, in the preferred form of the invention, by a laser which provides sufficient incident intensity to produce simultaneous absorption of two photons by the photopolymer molecules, each photon having one-half the energy required for normal single photon absorption.

(Col. 2, ll. 25-41)

Strickler et al. fails to disclose any photoactivatable crosslinkers. The polymerization reaction described in Strickler et al. proceeds with a one-component polymer system.

The second reference discussed with the Examiner was US PN 3453604 to Gieusec et al. Gieusec et al. describes optical memory systems made using multi-photon fluorescence. (Col. 1, ll. 11-14) As described in Gieusec et al., in multiphoton absorption, a “plurality of photons are absorbed in a single atomic transition”. (Col. 1, ll. 44-46) Gieusec et al. does not describe a photopolymerization reaction. In the described optical memory system, a multiphoton excited fluorescent material is added to the recoding medium. (Col. 1, ll. 66-70) The multiphoton fluorescent material reduces the level of exposure crosstalk in the recording medium. (Col. 2, ll. 1-9)

Claim Objections

Claim 14 stands objected to as failing to further limit the subject matter of a previous claim. Claim 14 has been amended to delete dependency from claim 12, thus obviating the rejection.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-2 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Goodman et al. (WO 99/54784).

Goodman et al. is directed to the use of multi-photon excitation to fabricate structural features having dimensions of less than about 1 micron. (Abstract)

In making the rejection, the Examiner points to page 15 of Goodman et al. in which bisarylazides are disclosed as possible crosslinking agents. (paper 200501718, page 14)

Claim 2 has been cancelled and several of the photoactivatable groups from claim 2 have been added to claim 1. Noticeably absent are the bisarylazides. Also, bisarylazides have been removed from claim 8. As this is the only photoactivatable group fulfilling the claim limitations that was disclosed in Goodman et al., this rejection is now moot.

For at least the foregoing reasons, reconsideration and withdrawal of the previous rejection under 35 U.S.C. § 103(a) are requested.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-5, and 7-11 stand rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. In particular, the Examiner appears to be confused by the language "point volume of activation". Applicants maintain that one of skill in the art would understand what is meant by a point volume of activation.

The Examiner maintains that "the specification does not make clear what point volume is meant by 'point volume of the activation'". (Paper 20060210, page 8) As described in the Specification on Page 16, paragraph 23, the method is a photochemical method suitable for the formation of structures "built up from elements with point volumes having dimensions of less than about 1 micron". Also as described in paragraph 23, two photon wide field excitation allows the formation of structures having individual point volumes with "X-Y dimensions of less than about 300 nm and optionally a Z-dimension of less than about 500 nm" while three-photon far field excitation allows the formation of structures comprising individual point volumes with "X-Y dimensions of less than about 250 nm and optionally a Z-dimension of less than about 300 nm. An advantage of the use of multi-photon excitation as presently claimed is "the ability of multi-photon excitation to probe deeply into a bulk or solution phase sample with an unprecedented degree of control in the x- and y-, as well as z-directions, with only minimal optical effects above and below the focal point, proteins can be accurately and precisely connected with reactive sites on naturally occurring tissues". (Specification, Paragraph 27) Thus, because multi-photon excitation is used in the claimed method, the point volume of

activation from the multi-photon source is generally the same as the point volume of the structure produced.

Merely to facilitate prosecution, claim 1 has been amended to specify that “wherein the point volume of the activation produces a structural element that has at least one dimension of less than about 1 micron.” Thus, the claimed dimension clearly refers to a dimension of the structural element that is produced. There is now no ambiguity as to what the claimed dimension refers.

For at least the foregoing reasons, reconsideration and withdrawal of this rejection under 35 U.S.C. § 112, second paragraph are requested.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 21-26 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over US PN 4,197,133. Claims 21-22, 25-27 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over US PN 5,518,864. Claims 21-23 and 25-27 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over US PN 4,433,043. Claims 21-23 and 25-26 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over Cao et al, Polymer International. Claims 21 and 25-26 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over US PN 3,265,772. Claims 21-22 and 25-26 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over US PN 4,602,097. Claims 21 and 26 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over WO 93/16131. Claims 21 and 26 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over WO 97/07161. Claims 21 and 26-27 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over US 2003/0194715. Claims 21 and 26-27 stand rejected under 35 U.S.C. § 102(b), as allegedly unpatentable over US PN 5,637,460. Claims 21-27 have been cancelled, thus obviating theses rejections.

For at least the foregoing reasons, reconsideration and withdrawal of the previous rejection under 35 U.S.C. § 102(b) are requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130

Respectfully submitted,

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